



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,718	11/27/2001	Akira Suzuki	Q67248	8371

7590 07/10/2003
SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

ZIMMERMAN, GLENN

ART UNIT PAPER NUMBER

2879

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,718

Applicant(s)

SUZUKI ET AL.

Examiner

Glenn Zimmerman

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-15 is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Amendment, filed on April 30, 2003, has been entered and acknowledged by the examiner.

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to **purported merits** or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by
Suzuki U.S. Patent 6,414,420

The applied reference has a common assignee with the instant application.
Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Suzuki discloses a spark plug **(title)** comprising a cylindrical metallic shell **(metallic shell Fig. 1 ref. 5)** having a tool engagement portion **(tightening portion ref. 5A)** for mounting the spark plug on an engine fixedly attached to an axially extending insulator **(insulator ref. 1)** inserted into the metallic shell, by crimping a protrusion **(swaging portion ref. 5C)** formed at one opening portion of the metallic shell toward a crimp rest portion **(Fig. 1 ref. 1 at 5C)** formed on an outer

Art Unit: 2879

circumferential surface of the insulator to thereby form the protrusion into a crimped portion of the metallic shell,

wherein a distance between opposed sides of the tool engagement portion is not greater than 14 mm (**col. 3 lines 3-4**); and the crimped portion as projected orthogonally on a virtual plane in parallel with an axis of the insulator is curved such that an end-side part of the crimped portion approaches the insulator, such that a tangent to the exterior outline at a base point of the crimped curve portion and a line perpendicular to the axis projected on the virtual plane from an angle of 50° - 110° , $^{\circ}$. One can clearly see from figure 2 that the angle formed is about 90° .

wherein the crimped portion as projected orthogonally on the virtual plane has a height in the range of from 1.0 to 3.0 mm as measured along the axis of the insulator (**col. 7 lines 44; col. 5 lines 30-32; see below**),

wherein the metallic shell comprises a thin-walled convex portion (**curved portion ref. 5D**) located at an axially intermediate position thereof and is radially outwardly convex, a first flange-like portion (**Fig. 1 flange portion of 5A**) provide circumferentially in a projecting condition, and a second flange-like (**seat portion ref. 5F**) portion provided circumferentially in a projecting condition, the first and second flange-like portions being located at axially opposite ends of the thin-walled convex portions; and

The crimped portion projects axially from an inner edge of an endface of the first flange-like portion in opposition to the thin-walled convex portion (**Fig. 2 no ref. #**).

Art Unit: 2879

The reference states that L is equal to 7 mm (**col. 7 line 44; col. 5 lines 30-32**).

If L is 7 mm then clearly the orthogonal portion is about 2.25 mm from Figure 2.

As to the limitation crimping in claim 1, it is the process step incorporated into which renders the claim as a product-by-process.

The courts have been holding that: “-In spite of the fact that a product-by-process claim may recite only process limitation, it is the product which is covered by the claim and not the recited process steps- - . (In re Hughes, 182 USPQ 106) - -”. Also - - Patentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. (In re Pilkington, 162 USPQ 147) - -.” Accordingly, “- - a rejection based on 35 U.S. C. section 102 or alternatively on 35 U.S. C. section 103 of the statute is eminently fair and acceptable.” (In re Brown and Saffer, 173 USPQ 685 and 688). - - The determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made- -. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985).

As such, no patentable weight is given to process steps recited in claim 1.

Regarding claim 3, Suzuki discloses the spark plug as claimed in claim 1, wherein a sealing filter layer (**talc powder or cushion material charged portion ref. 9**) is provided in a gap between an inner surface of the metallic shell and an outer surface of the insulator in a filling condition while being compressed between the crimped portion and the crimp rest portion (**col. 6 lines 55-62; 34-38**), to thereby seal the gap.

Regarding claim 4, Suzuki discloses the spark plug as claimed in claim 3, wherein seal rings (**sealing members 7 and 8**) are provided at axially opposite sides of the sealing filler layer so as to seal the insulator and the metallic shell.

Regarding claim 5, Suzuki discloses the spark plug as claimed in claim 1, wherein a ring-like seal member for sealing a gap between an inner surface of the metallic shell and an outer surface of the insulator is disposed between the crimped portion and the crimp rest in such a manner as to be axially compressed between the crimped portion and the crimp rest (**col. 6 lines 5-9, 34-38 and 27-29; Fig. 4**).

Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki U.S. Patent 6,373,173

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Suzuki discloses a spark plug (**title**) comprising a cylindrical metallic shell (**cylindrical metallic shell Fig. 1A ref. 1**) having a tool engagement portion (**tool engagement portion ref. 1e**) for mounting the spark plug on an engine fixedly attached to an axially extending insulator (**insulator ref. 2**) inserted into the metallic shell, by crimping a protrusion (**swaged portion ref. 1d**) formed at one opening portion of the metallic shell toward a crimp rest (**Fig. 2 no ref. #**) portion formed on an

outer circumferential surface of the insulator to thereby form the protrusion into a crimped portion of the metallic shell,

wherein a distance between opposed sides of the tool engagement portion is not greater than 14 mm (**col. 8 lines 31-32**); and the crimped portion as projected orthogonally on a virtual plane in parallel with an axis of the insulator is curved such that an end-side part of the crimped portion approaches the insulator, such that a tangent to the exterior outline at a base point of the crimped curve portion and a line perpendicular to the axis projected on the virtual plane from an angle of 50°-110°, °. One can clearly see from figure 1A that the angle formed is about 90°.

wherein the crimped portion as projected orthogonally on the virtual plane has a height in the range of from 1.0 to 3.0 mm as measured along the axis of the insulator (**col. 8 line 36 L₁=17mm see below**),

wherein the metallic shell comprises a thin-walled convex portion (**thin walled connection portion ref. 1h**) located at an axially intermediate position thereof and is radially outwardly convex, a first flange-like portion (**tool engagement portion flange ref. 1e**) provide circumferentially in a projecting condition, and a second flange-like (**a flange-shaped gas seal portion ref. 1g**) portion provided circumferentially in a projecting condition, the first and second flange-like portions being located at axially opposite ends of the thin-walled convex portions (**thin walled connection portion ref. 1h**); and

The crimped portion projects (**swaged portion ref. 1d**) axially from an inner edge of an endface of the first flange-like portion in opposition to the thin-walled convex portion (**Fig. 1a no ref. #**).

The height was measured using rulers and the fact that L1 was set to 17mm. The calculated result for h_1 is $1.6 \text{ mm} = 17\text{mm} * 3 \text{ mm} / 32 \text{ mm}$.

As to the limitation crimping in claim 1, it is the process step incorporated into which renders the claim as a product-by-process.

The courts have been holding that: “-In spite of the fact that a product-by-process claim may recite only process limitation, it is the product which is covered by the claim and not the recited process steps- - . (In re Hughes, 182 USPQ 106) - -”. Also - - Patentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. (In re Pilkington, 162 USPQ 147) - -.” Accordingly, “- - a rejection based on 35 U.S. C. section 102 or alternatively on 35 U.S. C. section 103 of the statute is eminently fair and acceptable.” (In re Brown and Saffer, 173 USPQ 685 and 688). - - The determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made- -. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985).

As such, **no** patentable weight is given to process steps recited in claim 1.

Regarding claim 7, Suzuki discloses the spark plug as claimed in claim 1, wherein an outer surface of the thin-walled convex portion (**thin walled connection portion ref. 1h**) is radially outwardly convex, and an inner surface of the thin-walled

Art Unit: 2879

convex portion is radially inwardly convex. The drawings of the thin-walled connection portion of Suzuki are clearly shaped like those shown in the application which are convex.

Allowable Subject Matter

Claims 8-15 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 8, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a spark plug including the combination of all the limitations as set forth in claim 8, and specifically wherein a distance between opposed sides of the tool engagement portion is not greater than 14 mm and that a crimped portion has an outwardly convex crimped curve portion at the end-side part and that a tangent to the exterior outline at a base point of the crimped curve portion and a line perpendicular to the axis projected on the virtual plane form an angle of 50 to less than 90 degrees could not be found elsewhere in prior art.

Regarding claims 9-15, claims 9-15 are allowed for the reasons given in claim 8, because of their dependency status on claim 8.

Art Unit: 2879

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn Zimmerman whose telephone number is (703) 308-8991. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is n/a.



Glenn Zimmerman
July 1, 2003



ASHOK PATEL
PRIMARY EXAMINER